| | | | |
|---|---|---|---|
| Species Tag: | 20003 | Name: | H2O-18 |
| Version: | 1 | | Water, |
| Date: | Dec. 1988 | | $^{18}$O isotope |
| Contributor: | R. L. Poynter | | |
| | | | |
| Lines Listed: | 726 | Q(300.0)= | 179.639 |
| Freq. (GHz) < | 9996 | Q(225.0)= | 117.004 |
| Max. J: | 16 | Q(150.0)= | 64.210 |
| LOGSTR0= | -9.4 | Q(75.00)= | 23.361 |
| LOGSTR1= | -8.0 | Q(37.50)= | 8.648 |
| Isotope Corr.: | -2.690 | Q(18.75)= | 3.054 |
| Egy. ($cm^{-1}$) > | 0.0 | Q(9.375)= | 1.260 |
| $\mu_a$ = | | A= | 825367.80 |
| $\mu_b$ = | 1.8546 | B= | 435354.05 |
| $\mu_c$ = | | C= | 276951.05 |

The microwave and submillimeter line measurements have been taken from F. C. De Lucia *et al.*, 1972, Phys. Rev. A **6**, 1324. Far-infrared line measurements have been taken from J. W. C. Johns, 1985, J. Opt. Soc. Am. B Opt. Phys. **2**, 1340. Infrared line measurements have been taken from G. Guelachvili, 1983, J. Opt. Soc. Am. **73**, 137, and from R. A. Toth, private communication. The dipole moment was assumed to be the same as for the parent molecular species.

May 2011: Contributor Brian Drouin

Two additional entries, with files labeled c020003o.* and c020003p.* are given for the separate Hydrogenic spin states of water (ortho and para). For the ortho states, an additional energy factor was used in the Hamiltonian to force the $J = 1_{0,1}$ energy level to be the reference level (with zero energy). These files were prepared without infromation from the infrared work quoted above and reproduce the combined rotational data fit reported in Johns's work. Separate partition sums for these states are given here:

| Q(T) | $H_2^{18}O$ ortho | $H_2^{18}O$ para |
|---|---|---|
| Q(300.0)= | 150.8666 | 44.8740 |
| Q(225.0)= | 102.1339 | 29.2468 |
| Q(150.0)= | 60.4800 | 16.0522 |
| Q(75.00)= | 27.6294 | 5.8434 |
| Q(37.50)= | 15.8688 | 2.2700 |
| Q(18.75)= | 11.4390 | 1.2060 |
| Q(9.375)= | 9.5484 | 1.0108 |